

## **REMARKS**

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claims 11, 14, 16 and 18-28 were pending in this application when examined.

Claims 18-21 have been allowed.

Claims 11, 14 and 16 have been cancelled.

Claim 25 has been amended to recite “said method consisting of the following steps”; to recite, in step (4), either (i) a vacuum thermal treatment on the carbon fine wire or (ii) an irradiation of an electron beam on the carbon fine wire; and to delete “at room temperature”. Support for the amendments to claim 25 may be found on page 8, lines 1-6 of the specification.

### **I. Claim Rejection Under 35 U.S.C. § 112**

The Examiner has rejected claims 25-28 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner has asserted that “at room temperature” presents new matter. Claim 25 has been amended to delete “at room temperature”. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

### **II. Claim Rejections Under 35 U.S.C. § 103**

The Examiner has rejected claims 11, 14, 16 and 22-24 under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa et al. (US 2002/0192143) in view of Fagan et al.; and has rejected claims 25-28 under 35 U.S.C. § 103(a) as being unpatentable over Miyazawa et al. and Fagan et al., as applied to claims 17 and 18, and further in view of Sakurabayashi et al. (US 7,291,318). As applied to the amended claims, Applicants respectfully traverse the rejections.

#### **Claims 11, 14, 16 and 22-24**

Claims 11, 14 and 16 have been cancelled, rendering their rejection moot.

In item I on page 5 of the Office Action, the Examiner has asserted that claims 22-24 are directed to the resulting product of the reactions addressed in previous Office Actions in connection with claim 18. The Examiner has also asserted that amorphous structures are taught in paragraphs [0022]-[0023] of Miyazawa et al.

However, Applicants take the position that claims 22-24 are directed to the resulting product of the reactions in connection with claim 25. For the reasons discussed below, the method of claim 25 is clearly patentable over the cited references.

In addition, Applicants maintain the position that Miyazawa et al. disclose “needle-like single crystals” and “needle-like polycrystals” (see paragraphs [0022]-[0023]), but do not disclose or suggest a C<sub>60</sub> fullerene needle comprising an “amorphous structure”, as recited in claim 22.

Therefore, claim 22 would not have been obvious over Miyazawa et al. in view of Fagan et al.

Claims 23 and 24 depend from claim 22, and thus also would not have been obvious over the references.

#### **Claims 25-28**

The transitional phrase “consisting of” excludes any element, step, or ingredient not specified in the claim (MPEP 2111.03).

Claim 25 has been amended to recite “said method **consisting of** the following steps”. Accordingly, claim 25 is limited to the four steps listed in the claim.

In particular, step (4) recites “a step in which **either** a vacuum thermal treatment at 600°C or higher **or** an irradiation of an electron beam with high energy of 100 keV or higher is carried out on the carbon fine wire”. Thus, step (4) of claim 25 is limited to **either** (i) a vacuum thermal treatment at 600°C or higher on the carbon fine wire, **or** (ii) an irradiation of an electron beam with high energy of 100 keV or higher on the carbon fine wire. Step (4) does not include both steps (i) and (ii).

On the other hand, Sakurabayashi et al. teach that “electron beam irradiation is performed on the CNT hybrid structures that are in a **heated state**” (see col. 5, lines 27-29, emphasis added). The “heated state” refers to a state whereby the CNT hybrid structures are at a temperature “**at least higher than room temperature** (typically, 25-30°C)” (see col. 5, lines 29-31, emphasis added). Moreover, the reference teaches, “Performing the electron beam irradiation in the ‘heated state’ allows a faster recovery from the damage (defects) caused by the electron beams than in the case where the electron beam irradiation is performed at room temperature (see col. 3, lines 32-35).”

The reference further teaches, “In the manufacturing method taught herein, the **thermal energy and the electron beam energy** are supplied in a **well-balanced manner**, thereby multiplying the effect of the energy, this remarkably improving the efficiency of manufacturing the CNT hybrid structures and improving the quality thereof (scarcity of defects, uniformity of shape, etc.)” (see col. 6, lines 40-46, emphasis added).

Accordingly, the reference clearly teaches **both** heating and electron beam irradiation.

On the other hand, claim 25 recites that only the electron beam irradiation is performed on the object without an additional heating step, or only a heating step is performed. Step (4) of claim 25 is limited to only the recited step of “**either** a vacuum thermal treatment at 600°C or higher **or** an irradiation of an electron beam with high energy of 100 keV or higher is carried out on the carbon fine wire”.

Thus, a person having ordinary skill in the art would not have been motivated to combine the teachings of Miyazawa et al. with Sakurabayashi et al. to arrive at the method of claim 25 with a reasonable expectation of success.

Therefore, claim 25 would not have been obvious over Miyazawa et al. in view of Fagan et al., and further in view of Sakurabayashi et al.

Claims 26-28 depend from claim 25, and thus also would not have been obvious over the references.

Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

### III. Conclusion

For these reasons, Applicants take the position that the presently claimed invention is clearly patentable over the applied references.

Therefore, in view of the foregoing amendments and remarks, it is submitted that the rejections set forth by the Examiner have been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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